

REMARKS

Claims 1, 5-7, 11-15, 19-20, 24-26, 30-31, 35-36 and 39-42 are pending in this application. Claims 1, 15, 26 and 31 are independent. Claims 7, 11-14, 20 and 24-25 are withdrawn from consideration pursuant to a Restriction Requirement.

Applicants thank the Examiner for the courtesies extended to their representative during the personal interview on April 22, 2008.

As discussed at the person interview, the present invention is directed to a piston made of aluminum cast alloy having improved thermo-mechanical fatigue resistance. A Ca content of 0.0005-0.003 mass % provides a desirable fine, homogenous microstructure (texture) that is not achieved outside of this range.

Claims 1, 5-6, 15, 19, 26, 30-31, 35-36 and 39-42 are rejected under 35 U.S.C. § 103(a) over RU 2092604C1 ("RU-604") and "Aluminum standards and data 2003" page 1-6.

RU-604 discloses an aluminum-based alloy containing (in wt.%) "at least one other element selected from group comprising bismuth, barium, antimony, calcium, sodium, potassium and strontium 0.03-0.15". RU-604 at English-language abstract.

"Aluminum standards and data 2003" is cited for disclosing the addition of Na, Sr, Ca and/or P to 3xx and 4xx type Al-Si foundry alloys in order to modify the structure; and that 0.005-0.15% Ca and $\leq 0.060\%$ P are effective modifiers. Final Rejection at page 2, lines 20-23.

Any *prima facie* case for the obviousness of independent Claims 1, 15, 26 and 31 is rebutted by the significant improvement in homogeneous microstructure (texture) that is achieved by the low Mg (i.e., "Mg (Magnesium): equal to or less than 0.2 mass %") embodiments of independent Claims 1 and 31, and by the medium Mg (i.e., "Mg (Magnesium): 0.2-2 mass %") embodiments of independent Claims 15 and 26, over the range

of "Ca (Calcium) : 0.0005-0.003 mass%". See Second Declaration Under 37 C.F.R. § 1.132 filed November 7, 2008.

The Final Rejection at page 5, lines 9-10, admits that "the examiner agrees that declarant has shown the Ca is critical in the claimed range of 0.0005-0.003".

However, the Final Rejection at page 5, lines 10-12, asserts "it is unclear if the unexpected results occur over the entirely claimed alloying ranges of Si, Cu, Mg, Ni, Fe, Mn, etc".

The attached Third Declaration Under 37 C.F.R. § 1.132 demonstrates that the significant improvement in homogeneous microstructure (texture) that is achieved by the low Mg (i.e., "Mg (Magnesium): equal to or less than 0.2 mass %") embodiments of independent Claims 1 and 31, and by the medium Mg (i.e., "Mg (Magnesium): 0.2-2 mass %") embodiments of independent Claims 15 and 26, over the range of "Ca (Calcium) : 0.0005-0.003 mass%", is achieved over the ranges of Ti, Si, Cu, Fe, Ni, P, V, Zr and Mn respectively featured in independent Claims 1, 15, 26 and 31.

The cited prior art fails to suggest the significant improvement in homogeneous texture achieved by the present invention over the range of "Ca (Calcium) : 0.0005-0.003 mass%" in the alloys featured in independent Claims 1, 15, 26 and 31.

Thus, any *prima facie* case of obviousness is rebutted. Therefore, the rejection under 35 U.S.C. § 103(a) should be withdrawn.

Pursuant to M.P.E.P. § 821.04, after independent product Claims 1 and 15 are allowed, Applicants respectfully request rejoinder, examination and allowance of withdrawn method Claims 7, 11-14, 20 and 24-25, which include all of the limitations of product Claims 1 and 15, respectively.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the application is in condition for allowance. Applicants respectfully request favorable consideration and prompt allowance of the application.

Should the Examiner believe that anything further is necessary in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

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Attached:

Third Declaration Under 37 C.F.R. § 1.132